

## Supplementary Appendix

### Social Determinants of Health Associated with the Development of Sepsis in Adults: A Scoping Review

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This supplementary appendix provides

1. Sample search strategy
2. A list of the included studies
3. Risk of bias assessment of included studies

## 1. Sample search strategy (PubMed)

### *Search String*

((((((((((frail[Title]) OR frailty[Title]) OR frailty syndrome[Title])) AND (((((((sepsis) OR septicemia) OR septicemia) OR septic shock) OR adult sepsis) OR systemic infection) OR blood poison\*) OR bacteremia))) OR (((((((family physician[Title]) OR family doctor[Title]) OR family practitioner[Title]) OR general practitioner[Title]) OR general physician[Title]) OR general doctor[Title])) AND (((((((sepsis) OR septicemia) OR septicemia) OR septic shock) OR adult sepsis) OR systemic infection) OR blood poison\*) OR bacteremia))) OR (((((((((((mental health[Title]) OR mental illness[Title]) OR depression[Title]) OR anxiety[Title]) OR anxiety disorder[Title]) OR bipolar[Title]) OR schizophrenia[Title]) OR schizotypal[Title]) OR borderline personality[Title]) OR personality disorder[Title]) OR psychiatry[Title])) AND (((((((sepsis[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR bacteremia[Title]) OR septicemia[Title]) OR septicemia[Title]) OR septicemia[Title]) OR blood poisoning[Title]) OR systemic infection[Title]))) OR (((((((((((ssri[Title]) OR ssri\*[Title]) OR selective serotonin reuptake inhibitor[Title]) OR sari[Title]) OR saris[Title]) OR sertraline[Title]) OR zoloft[Title]) OR duloxetine[Title]) OR cymbalta[Title]) OR fluoxetine[Title]) OR trazodone[Title]) OR benzodiazepine[Title]) OR benzodiazepines[Title]) OR lorazepam[Title]) OR clonazepam[Title]) OR diazepam[Title])) AND (((((((sepsis[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR bacteremia[Title]) OR septicemia[Title]) OR septicemia[Title]) OR blood poisoning[Title]) OR systemic infection[Title]))) OR (((((((sepsis[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR bacteremia[Title]) OR septicemia[Title]) OR septicemia[Title]) OR blood poisoning[Title]) OR systemic infection[Title]))) AND (((((((EtOH[Title]) OR alcohol[Title]) OR alcohol dependenc\*[Title]) OR drinking[Title]) OR heavy drinking[Title]) OR alcohol use[Title]) OR occasional alcohol[Title]) OR heavy alcohol[Title]) OR binge drinking[Title]))) OR (((((((social support levels[Title]) OR social support[Title]) OR caregiver[Title]) OR caretaker[Title]) OR household[Title]) OR living alone[Title])) AND (((((((sepsis[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR bacteremia[Title]) OR septicemia[Title]) OR septicemia[Title]) OR blood poisoning[Title]) OR systemic infection[Title]))) OR (((((((sepsis[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR bacteremia[Title]) OR septicemia[Title]) OR septicemia[Title]) OR blood poisoning[Title]) OR systemic infection[Title]))) AND (((((((smoking[Title]) OR smoker[Title]) OR cigarette[Title]) OR cigarettes[Title]) OR nicotine[Title]))) OR (((((((sepsis[Title]) OR septicemia[Title]) OR septicemia[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR systemic infection[Title]) OR blood poison\*[Title]) OR bacteremia[Title])) AND (((((((SES[Title]) OR socioeconomic status[Title]) OR social class[Title]) OR income[Title]) OR low-income[Title]) OR poverty[Title]) OR (((((((race[Title]) OR population group\*[Title]) OR ethnicity[Title]) OR ethnic group\*[Title]) OR

nationality[Title])) AND (((((((sepsis[Title]) OR septicemia[Title]) OR septicaemia[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR systemic infection[Title]) OR blood poison\*[Title]) OR bacteremia[Title]) OR ((social determinants of health) AND sepsis[Title]) OR (((sex[Title]) OR gender[Title])) AND (((((((sepsis[Title]) OR septic shock[Title]) OR adult sepsis[Title]) OR bacteremia[Title]) OR septicemia[Title]) OR septicaemia[Title]) OR blood poisoning[Title]) OR systemic infection[Title]))) AND ("1970/01/01"[PDat] : "2022/01/31"[PDat]))

### *Search Terms*

*Sepsis:* sepsis, septic shock, adult sepsis, bacteremia, septicemia, septicaemia, blood poisoning, systemic infection

*Frailty:* frail, frailty, frailty syndrome

*Registration with a Family Doctor:* family physician, family doctor, family practitioner, general practitioner, general doctor, general physician

*Mental Illness and Medications:* mental health, mental illness, depression, anxiety, anxiety disorder, bipolar, schizophrenia, schizotypal, borderline personality disorder, personality disorder, psychiatry, selective serotonin reuptake inhibitor, SSRI, SARI, SARIs, sertraline, Zoloft, duloxetine, Cymbalta, fluoxetine, trazodone, benzodiazepine, benzodiazepines, lorazepam, diazepam, clonazepam

*Alcohol Use:* EtOH, alcohol, alcohol dependenc\*, drinking, heavy drinking, alcohol use, occasional alcohol, heavy alcohol, binge drinking

*Social Support Levels:* social support levels, social support, caregiver, caretaker, household, living alone

*Smoking:* smoking, smoker, cigarette, cigarettes, nicotine

*Socioeconomic Status:* socioeconomic status, SES, social class, income, low-income, poverty

*Race:* race, population group\*, ethnicity, ethnic group\*, nationality

*Gender:* sex, gender

*Illicit drug use disorders:* illicit drug use disorders, substance-related disorders, intravenous substance abuse

Note: the asterisk (\*) used in the search string and search terms represents the Boolean operator truncation symbol

## **2. List of all included studies**

Sex and Gender (n = 2)

1. [Sakr et al] The influence of gender on the epidemiology of and outcome from severe sepsis
2. [Wichmann et al] Incidence and mortality of severe sepsis in surgical intensive care patients the influence of patient gender on disease process and outcome

#### Race (n = 6)

1. [Barnato et al] Racial Variation in the Incidence, Care, and Outcomes of Severe Sepsis
2. [Dombrovskiy et al] Occurrence and outcomes of sepsis Influence of race
3. [Esper et al] The role of infection and comorbidity- Factors that influence disparities in sepsis
4. [Plurad et al] The association of race and survival from sepsis after injury
5. [Mayr et al] Infection Rate and Acute Organ Dysfunction Risk as Explanations for Racial Differences in Severe Sepsis
6. [Moore et al] Black-white racial disparities in sepsis- a prospective analysis of the REasons for geographic and racial differences in stroke (REGARDS) cohort

#### Socioeconomic Status (n = 5)

1. [Koch et al] Socioeconomic inequalities in Risk of Hospitalization for community-acquired bacteremia: A Danish population-based case-control study
2. [Donnelley et al] Association of Neighborhood Socioeconomic Status With Risk of Infection and Sepsis
3. [Oestergaard et al] The associations between socioeconomic status and risk of Staphylococcus aureus bacteremia and subsequent endocarditis - a Danish nationwide.
4. [Goodwin et al] Where You Live Matters: The Impact of Place of Residence on Severe Sepsis Incidence and Mortality
5. [Mendu et al] Relationship between neighborhood poverty rate and bloodstream infections in the critically ill

#### Health Behaviours (n = 2)

1. [Ferro et al] Smoking in Trauma Patients- The Effects on the Incidence of Sepsis, Respiratory Failure, Organ Failure, and Mortality
2. [O'Brien et al] Alcohol dependence is independently associated with sepsis, septic shock, and hospital mortality among adult intensive care unit patients

#### Social Support (n = 1)

1. [Seymour et al] Marital Status and the epidemiology and outcomes of sepsis

#### Old age & Frailty (n = 4)

1. [Martin et al] The effect of age on the development and outcome of adult sepsis
2. [Mahalingam et al] Frailty Syndrome and Risk of Sepsis in the REasons for Geographic and Racial Differences in Stroke (REGARDS) Cohort
3. [Wang et al] Chronic Medical Conditions and Risk of Sepsis
4. [Angus et al] Epidemiology of severe sepsis in the United States: Analysis of incidence, outcome, and associated costs of care

### 3. Risk of Bias Assessment of Included Studies

**Table 1.** Risk of Bias Assessment Using JBI Checklist for Case-Control Studies

Author	Group comparability	Case-control matching	Patient Recruitment criteria	Exposure Measurement Reliability	Exposure Measurement Consistency	Confounding Factor Identification	Strategies to deal with Confounding Factors	Outcome Assessment	Exposure Period	Statistical analysis
Koch	Low	Low	High <sup>a</sup>	Low	Low	Low	Low	Low	Low	Low

<sup>a</sup> Cases and controls were identified from two different source populations

**Table 2.** Risk of Bias Assessment Using JBI Checklist for Cohort Studies

Author	Patient Recruitment	Patient Assignment	Exposure Measurement	Confounding Variable Identification	Strategies to Address Confounding	Absence of Outcome Initially	Outcome Measurement	Follow up Time	Follow up Completion	Strategies to Deal with Loss to Follow-up	Statistical Analysis
Angus	Low	Low	Low	Low	Low	N/A	Low	N/A	N/A	N/A	Low
Barnato	Low	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	Low
Dombrowskiy	Low	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	Low
Donnelley	Low	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	Low
Esper	Low	Low	Low	Unclear <sup>d</sup>	Unclear <sup>h</sup>	N/A	Low	N/A	N/A	N/A	Low
Ferro	Low	Low	Low	Unclear <sup>e</sup>	Unclear <sup>h</sup>	Low	Low	N/A	N/A	N/A	Low
Goodwin	Low	Low	High <sup>a</sup>	Low	Low	Low	Low	N/A	N/A	N/A	Low
Mahalingam	Low	Low	Low	Low	Low	N/A	Low	Low	Low	Low	Low
Martin	Low	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	Low
Mayr	Low	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	Low
Mendu	Low	Low	High <sup>b</sup>	Low	Low	Low	Low	N/A	N/A	N/A	Low
Moore	Low	Low	Low	Unclear <sup>f</sup>	Low	Low	Low	Low	Low	Low	Low
O'Brien	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Oestergaard	Low	Low	Low	Low	Low	N/A	Low	Low	N/A	N/A	Low
Plurad	Low	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	Low
Sakr	Low	Low	Unclear <sup>c</sup>	Low	Low	Low	Low	Low	Low	N/A	Low
Seymour	Low	Low	Low	Low	Low	Low	Low	N/A	N/A	N/A	Low
Wang	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
Wichmann	Low	Low	Low	High <sup>g</sup>	High <sup>i</sup>	Low	Unclear <sup>j</sup>	N/A	N/A	N/A	Low

<sup>a</sup>The authors used patient zip codes to determine patient geographic location. If any part of the patient's zip code was in a medically underserved area, the patient had MUA status. However, depending on patient's location within the zip code, they themselves may not have been in a medically underserved area

<sup>b</sup>Patients who did not have a permanent address or were homeless were excluded from the study. Since the study focused on neighbourhood poverty and incidence of sepsis, this group was important to include in the study

<sup>c</sup>The authors interchange the definitions of gender and sex within their paper. The title of the paper focuses on the measurement of gender, a more socially defined definition, on sepsis incidence, however authors report collecting data related to sex, a biological definition.

<sup>d</sup> Didn't explicitly state confounding factors in their methods section

<sup>e</sup> Didn't explicitly state confounding factors in their methods section, but did provide a patient characteristics table

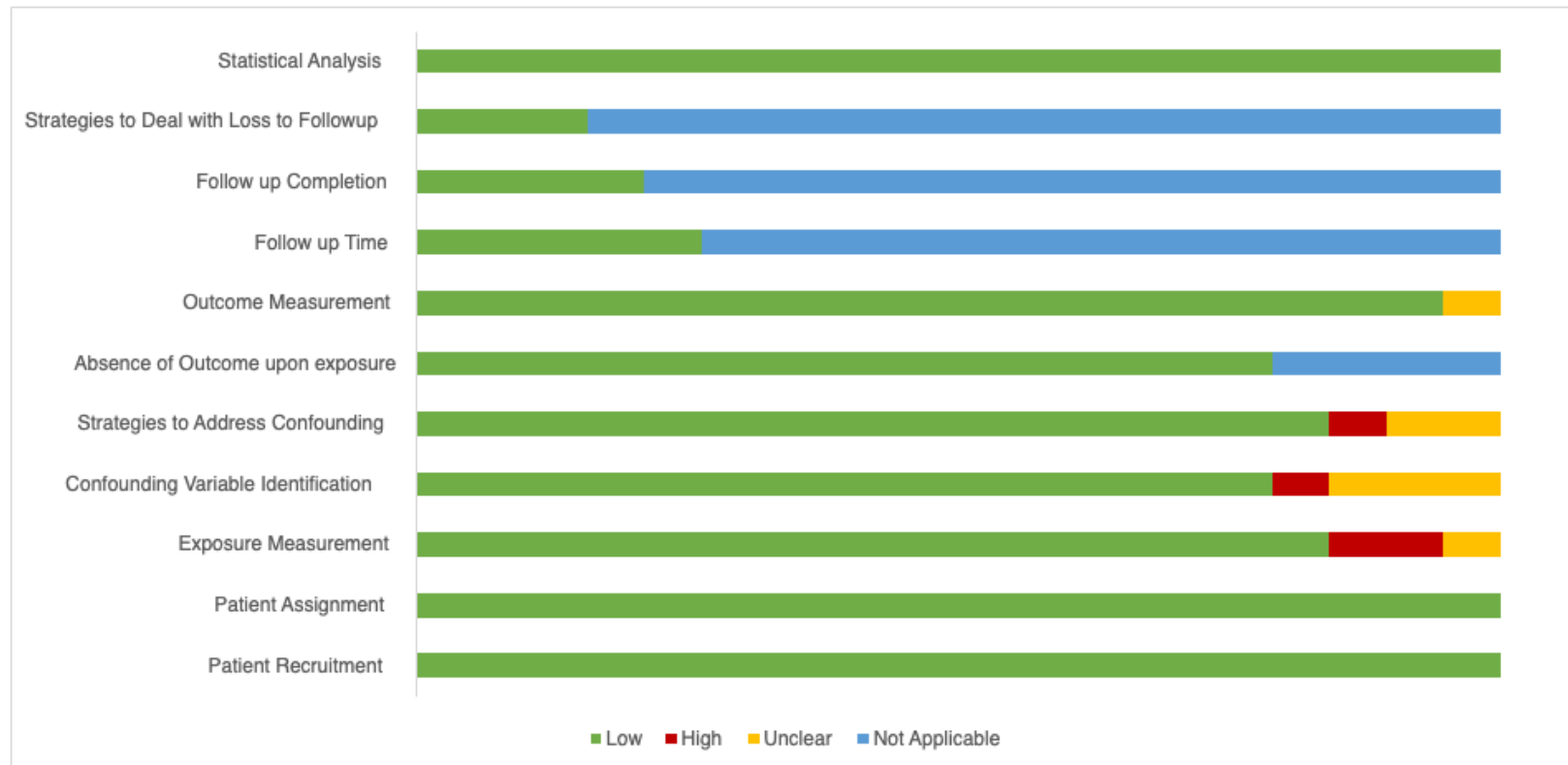
<sup>f</sup> Confounding factors were not stated a priori, but were accounted for in the analysis

<sup>g</sup>Did not identify confounding factors, and only evaluated age differences in different groups

<sup>h</sup>Patient characteristic tables were available in the results section, but there was no discussion of how these were used to evaluate confounding variables

<sup>i</sup>Did not discuss account for confounding factors in their methods or results section

<sup>j</sup>No information was provided on how the primary outcome was measured



**Figure 1:** RoB Assessment of Cohort Studies using the JBI Checklist for Cohort Studies